From: Gary Mercer [redacted]
Sent: Wednesday, June 17, 2020 11:27 AM
To: MORASH, MELANIE
Cc: Jennings, Lynne; garry waldeck; DiLorenzo, James; Hoskins, Bart; [redacted]; [redacted]; [redacted]
Subject: Re: Olin Site - Question on PRG for Ammonia in Surface Water

I have reviewed Olin's memo AWQC for Ammonia (November 26, 2019) and the memo PRGs for Soils, Sediments, and Surface Water (May 15, 2020) and have several concerns with the selected ammonia PRG of 15 mg/l. As developed, the criteria would not be protective of aquatic life in the streams.

My concerns and supporting reasons are listed as follows:

1. Pg 2 of Olin's Memo AWQC for Ammonia (November 26, 2019) states the following:

Wood scientists have inspected the South Ditch during monthly inspections and Olin personnel have inspected the South Ditch weekly for more than 18 years. Wood biologists have also inspected the East Ditch on numerous occasions in each of the seasons of the year. Neither fish nor mussels have been observed in either of the ditches. USEPA representatives concurred at the October 2, 2019 meeting that the absence of fish and mussels is an appropriate basis for deriving a site-specific ammonia AWQC for the two ditches.

The lack of fish and mussel in the stream is not surprising with the current levels of ammonia and chromium. Fish and mussel larvae would not survive with the current high concentration of the two pollutants. Comparative streams should be used or default to the possible presence of fish. This means using Table N.8 not N.9 which is protective of early life stages in the Ammonia AWQC for Ammonia (2013).

2. Use of Spring Temperature Data: The ammonia criteria is a function of pH and temperature. Higher temperatures require a lower criteria for ammonia to be protective of aquatic life. Using temperature data for March and April is not appropriate. The values of 9.2 C (49 F) for the East Stream and 6.9 C (44 F) for the South Stream were used. If no summer data is available, a default of 20 C (68 F) can be used.

3. Use of mean values of pH and Temperature Data: To determine the ammonia criteria, the mean of the pH data and the mean of the temperature data were developed and used. (See Table 1 AWQC for Ammonia (2019)). The mean value should not be used. Using a mean of the data would produce a criteria that protects aquatic life only about half the time. An extreme value (typically 90 percentile or max value) should be used to be protective all the time.

For pH:
- East Stream: Use 8.9 instead of 7.1.
- South Stream : Use 8.9 instead of 6.4.

For Temperature: (Note: see Comment #2 above)
- East Stream: Use 14.3 instead of 9.2.
- South Stream: Use 11.7 instead of 6.9.

4. On page 4 of PRGs for Soils, Sediments, and Surface Water (May 15, 2020) states the following:

This memorandum identified a CCC of 14 mg/L for the East Ditch and 19 mg/L for the South Ditch. USEPA has identified a single site-specific ammonia PRG for surface water at the site of 15 mg/L.

Using a value of 15 mg/l for the ammonia criteria would not be protective in the East Stream. Given the values, a value of 14 mg/l should be used intead of 15, if a single value is to be used.

5. Compliance. In Table 2.1-13 of OU1 and OU2 Feasibility Study (Vol. I) dated April 24, 2020 a footnote states the following:

Surface Water PRG compliance = geometric or arithmetic mean ≤ PRG based on data distribution (lognormal or normal, respectively).

The ammonia (and chromium) criteria is a not-to-exceed chronic value. Any exceedences above the criteria is harmful to aquatic life. Compliance can not be based on having an arithmetic average of the values be below the criteria: all values need to be below the criteria. It is even more troubling that it appears that geometric means would be even considered for compliance.

6. Chromium: Though I have not seen the details of the development of the PRG for Chromium, I suspect many of the above comments apply to how the criteria was developed. The Chromium criteria is a function of hardness, and it appears the average, rather than an extreme hardness value was used from the available data. Also, compliance to the criteria is based on a mean of the values rather than a not-to-exceed value.

I understand that the development of the PRGs was a negotiated process between Olin and USEPA and some give and take may occurred. But the overall goal of the project is to remediate the impacts from the site to the ecological and human health. By allowing PRGs that are not actually protective of aquatic life; would negate the whole effort.

---- On Tue, 16 Jun 2020 13:58:06 -0400 **MORASH, MELANIE <morash.melanie@epa.gov>** wrote ----

Attached is the memo. I'm also including Bart on this e-mail chain.
--Melanie

From: Gary Mercer [redacted]
Sent: Tuesday, June 16, 2020 9:41 AM
To: MORASH, MELANIE <morash.melanie@epa.gov>; Jennings, Lynne <Jennings.Lynne@epa.gov>; garry waldeck <Garry.Waldeck@state.ma.us>; DiLorenzo, James <dilorenzo.jim@epa.gov>
Cc: [redacted]
Subject: Olin Site - Ammonia in Surface Water PRG

All,

I was reviewing the Tech Memo "Documentation of Preliminary Remediation Goals (PRGs) for Soils, Sediments, and Surface Water" dated May 15, 2020 and I have some concerns with the selection of 15 mg/l for the ammonia PRG. The following paragraph is on page 4 of the TM on PRGs.

The site-specific ammonia CCC was calculated based on site-specific surface water temperature and pH data consistent with Table N-1 in Appendix N of Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater (USEPA, 2013). The documentation of the site-specific CCC is presented in Site-Specific AWQC for
Ammonia – Olin Chemical Superfund Site (Wood 2019) submitted by Olin to USEPA by electronic mail on November 26, 2019. This memorandum identified a CCC of 14 mg/L for the East Ditch and 19 mg/L for the South Ditch. USEPA has identified a single site-specific ammonia PRG for surface water at the site of 15 mg/L.

- Reviewing the Appendix N of the AWQC for Ammonia (2013), Table N-1 is for CMC (Acute) values not CCC (Chronic). Table N-8 or N-9 should be used for a chronic criteria value. This may be a simple typo in the TM or a incorrect table may have been used to develop the ammonia PRG.

Can you forward us the TM Site-Specific AWQC for Ammonia – Olin Chemical Superfund Site (Wood 2019)? I may be able to answer this question with the memo.